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On graphs with maximum size in their switching classes

Abstract: In his PhD thesis [*Structural aspects of switching classes*, Leiden Institute of Advanced Computer Science, 2001] Hage posed the following problem: "characterize the maximum size graphs in switching classes". These are called *s-maximal* graphs. In this paper, we study the properties of such graphs. In particular, we show that any graph with sufficiently large minimum degree is s-maximal, we prove that join of two s-maximal graphs is also an s-maximal graph, we give complete characterization of triangle-free s-maximal graphs and non-hamiltonian s-maximal graphs. We also obtain other interesting properties of s-maximal graphs.

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